

# Research on Climate Change and Water in SADC

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***WORKSHOP ON UNDERSTANDING THE LINKAGES BETWEEN CLIMATE CHANGE HUMAN HEALTH, WATER AND FOOD SECURITY***

*Cape Town Lodge Hotel, South Africa*

*18-20 February, 2009*



# Outline

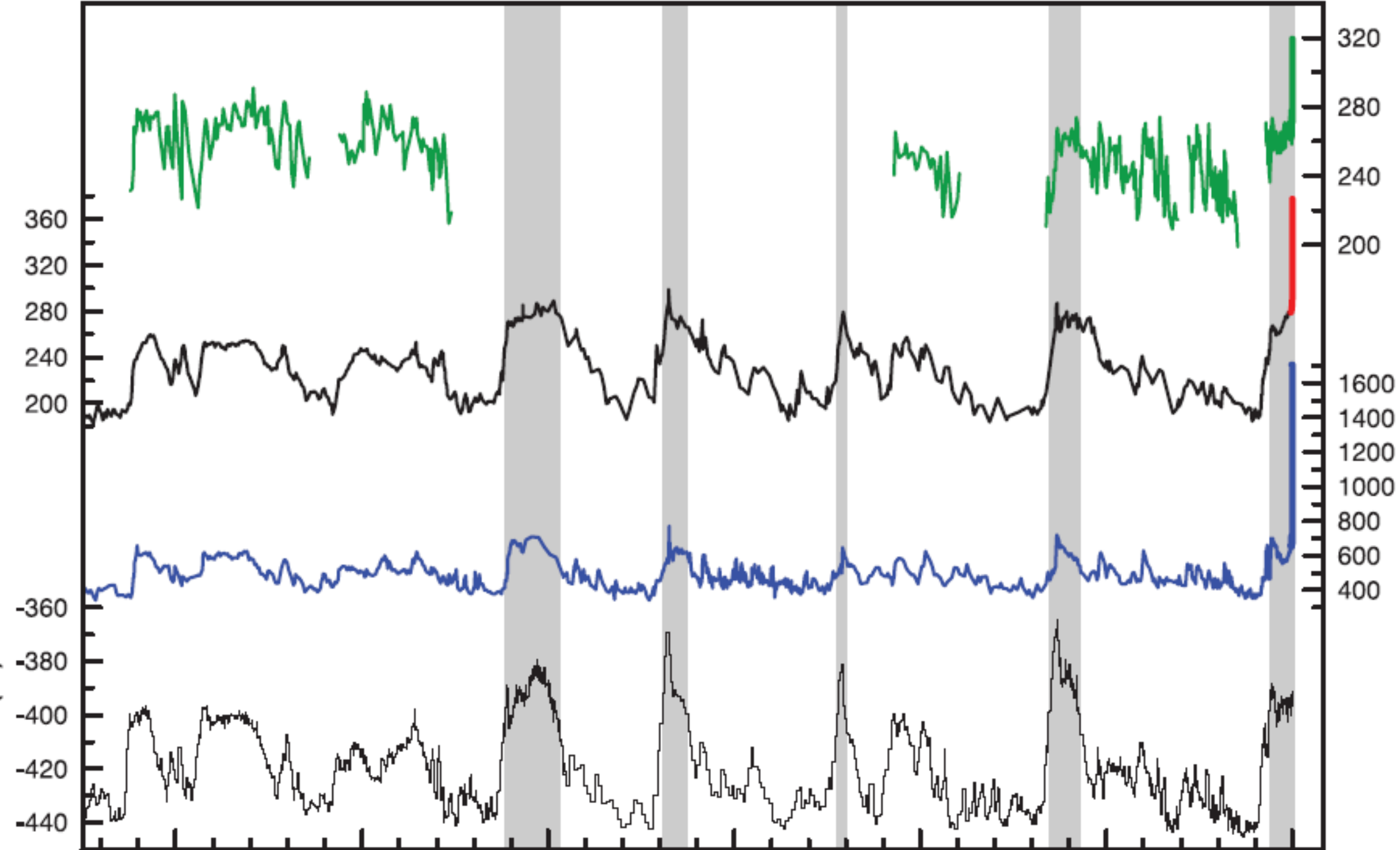
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- 1. Observed and projected global trends**
- 2. Observed and Projected Trends in SADC**
- 3. Research on climate change and water resources in SADC**
- 4. Networks**
- 5. Knowledge gaps and research agenda**
- 6. Way forward**

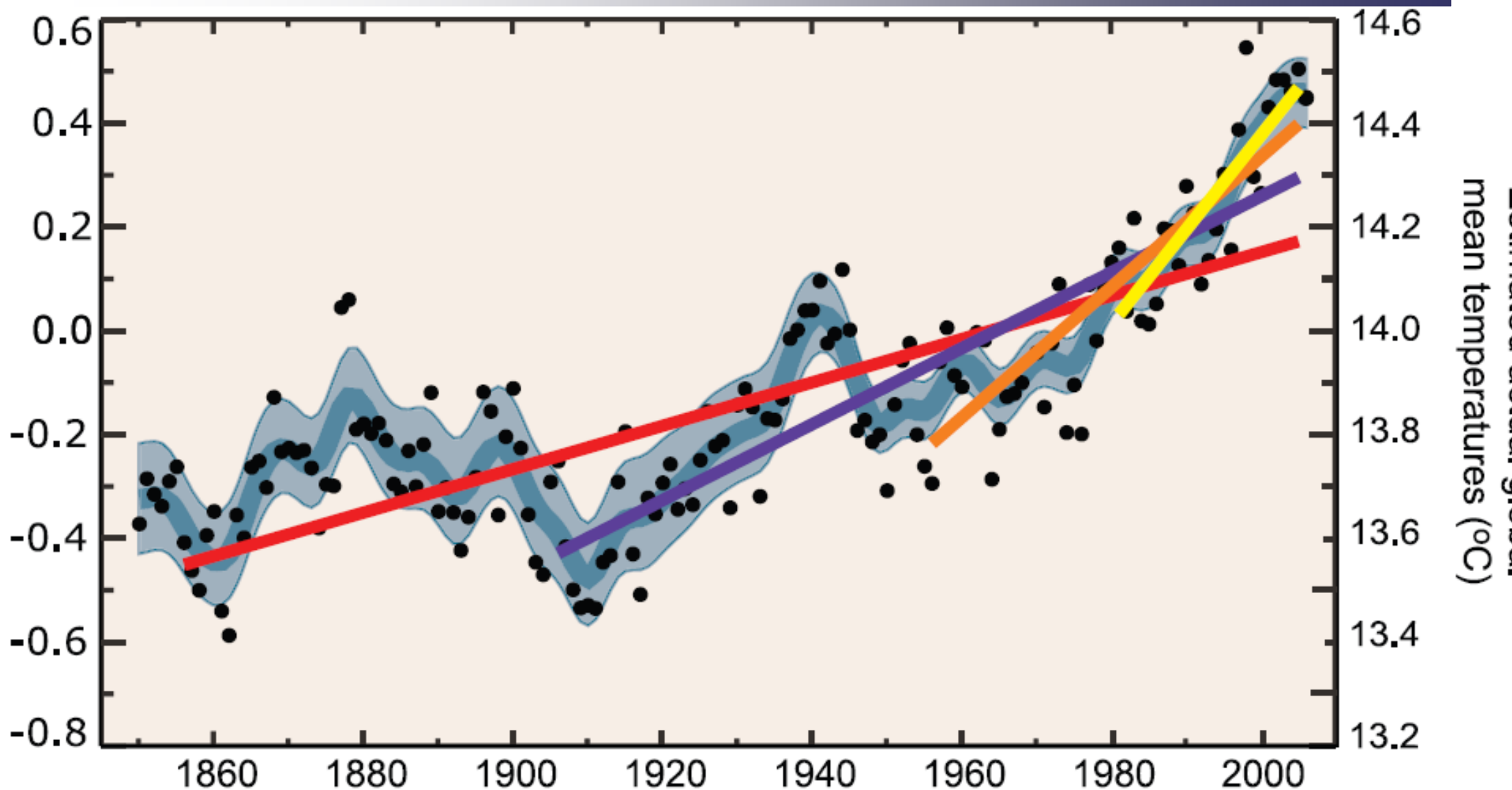
# Observed and Projected Trends: IPCC findings

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# Glacial – Interglacial ice core data



# Global temperature trends

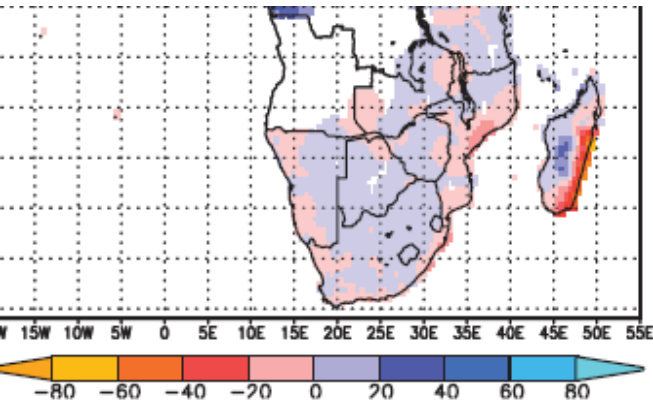


- Annual mean
- Smoothed series

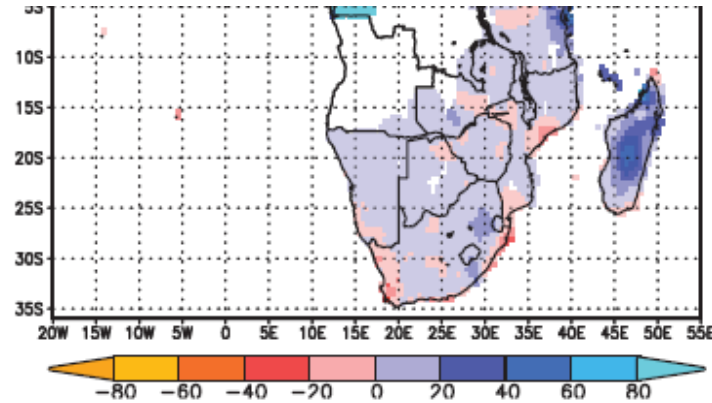
Period	Rate
Years	$^{\circ}\text{C}$ per decade
25	$0.177 \pm 0.052$
50	$0.128 \pm 0.026$

# Changes in precipitation

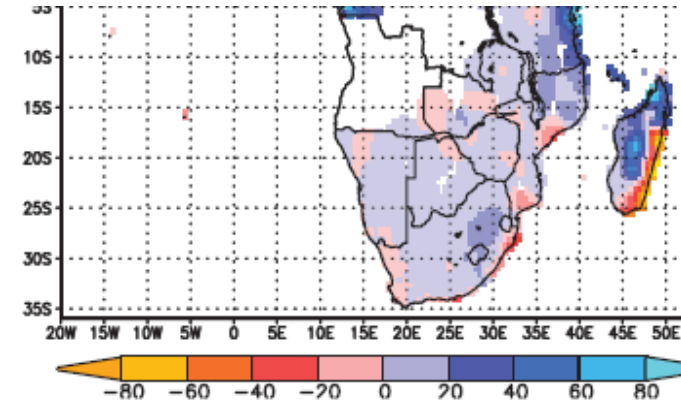
HadAM3 JJA



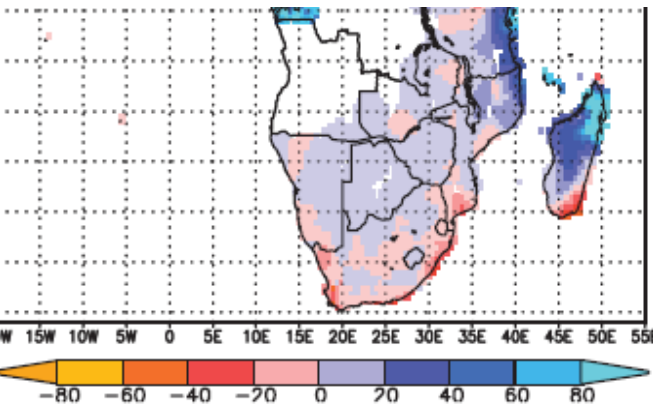
ECHAM4.5 JJA



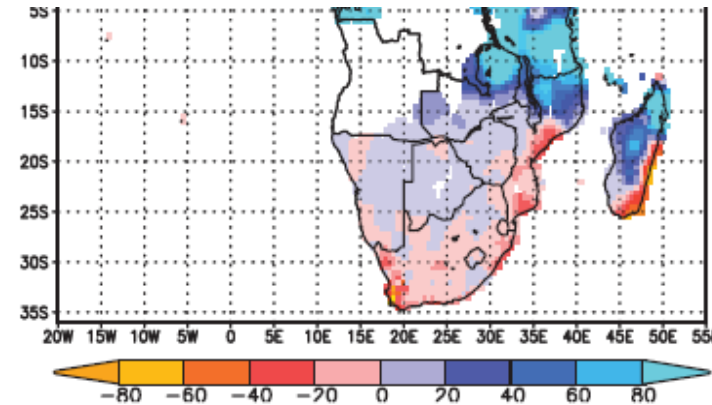
CSIRO Mk2 JJA



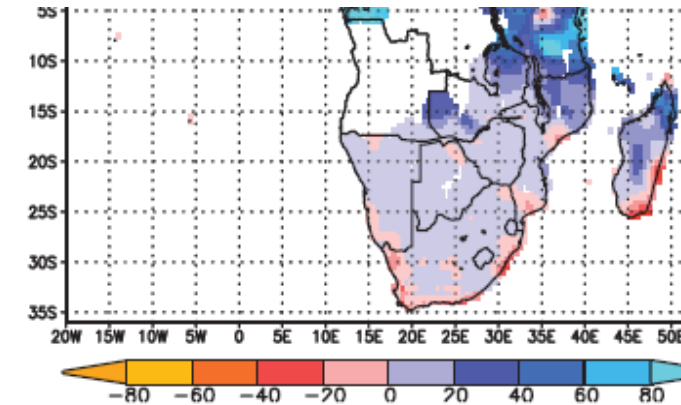
GFDL v2.1 JJA



MIROC JJA



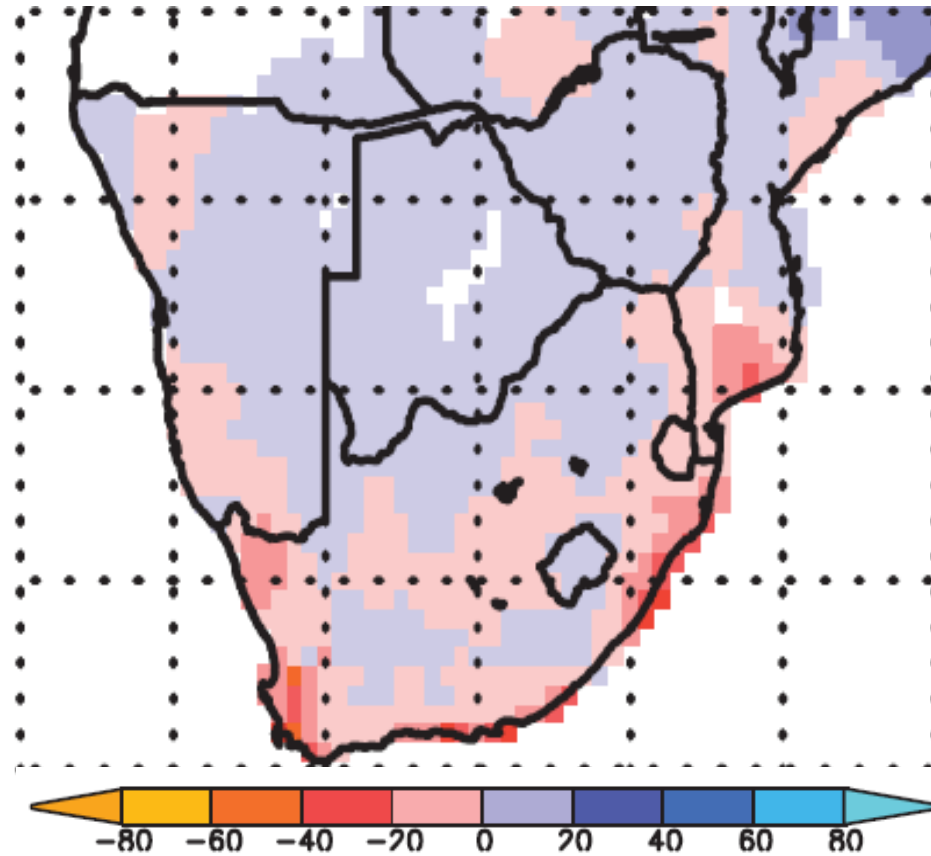
MRI CGCM JJA



*"In southern Africa, the frequency of extremely dry austral winters and springs increases to roughly 20%, while the frequency of extremely wet austral summers doubles in this ensemble of models."*

# Changes in precipitation

GFDL v2.1 JJA



# Observed and Projected Trends in Southern Africa

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- ❖ The dominate impact of global warming on water is predicted to be a reduction in soil moisture and a reduction in runoff
- ❖ Simulations for the Zambezi Basin for example indicate a possible 15% decrease in precipitation; increased evaporation losses of about 15-25% and diminishing runoff of about 30-40%
- ❖ Prospects of climate change have serious implications for regional development
- ❖ Growing water scarcity, increasing population, degradation of shared freshwater ecosystems, and competing demands for shrinking natural resources shared by a number of riparian states have the potential for creating bi- and multi-lateral conflicts
- ❖ **SO WHAT ARE WE DOING??**

## Methodology

### ❖ Predominately internet search

- ✓ Projects
- ✓ Publications

### ❖ Follow-up discussions

- ✓ Email
- ✓ Telephone
- ✓ Video conference

### ❖ Literature Review

### ❖ Attending related conferences/workshops

- ✓ Training of trainers workshop on climate change and water resources

# Research on Climate Variability and Change *and* Water in SADC

Google Search “impact of climate change on water”

Global	28500
South Africa	25
Zimbabwe	5
Botswana	3
Zambia	3
Tanzania	3
Malawi	3
Mozambique	0
Lesotho	0
Namibia	3
DRC	0
Seychelles	0
Swaziland	0
Madagascar	0
Angola	0
Mauitius	0

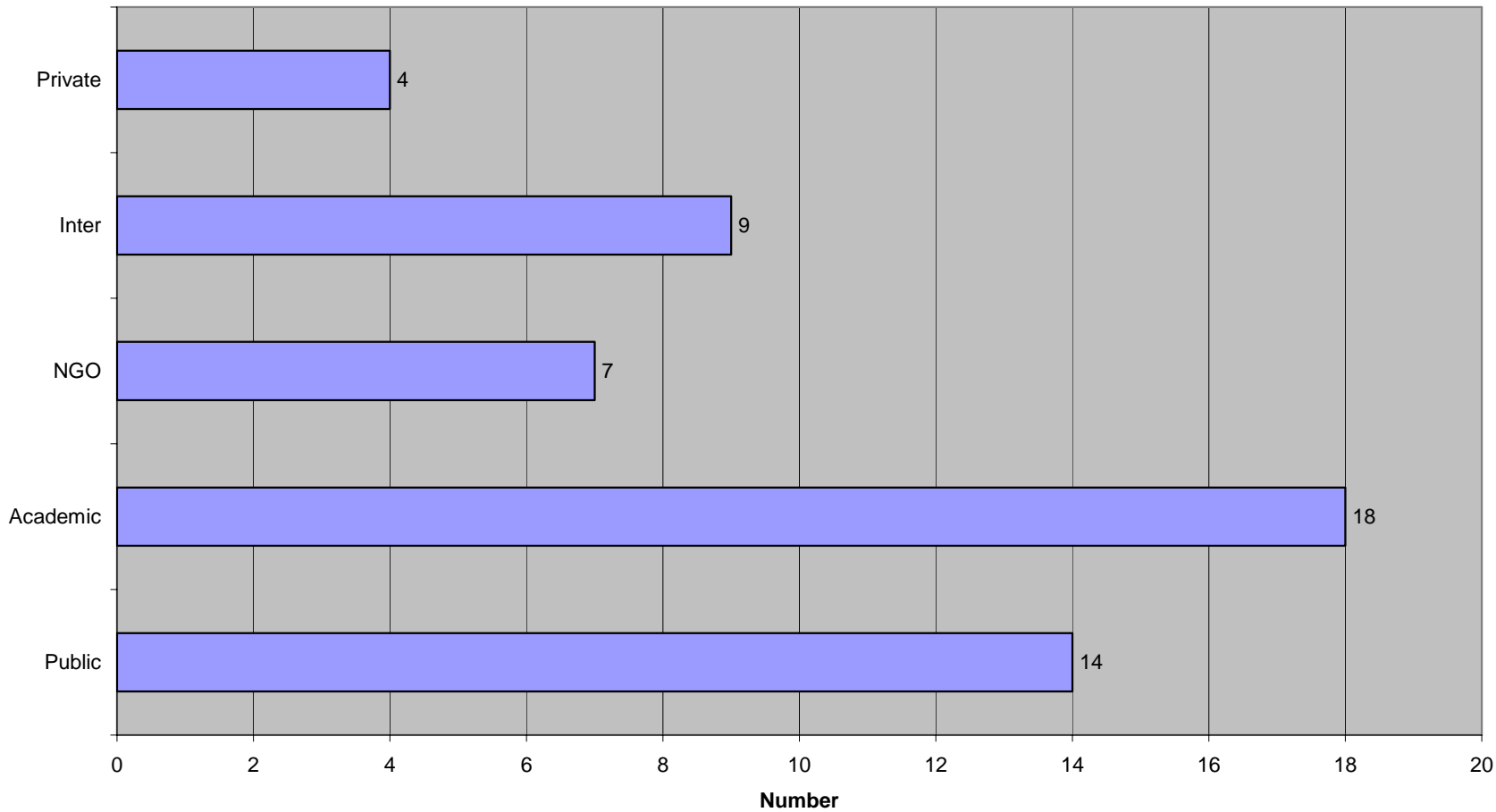
**DWF**

**Danish Water Forum**

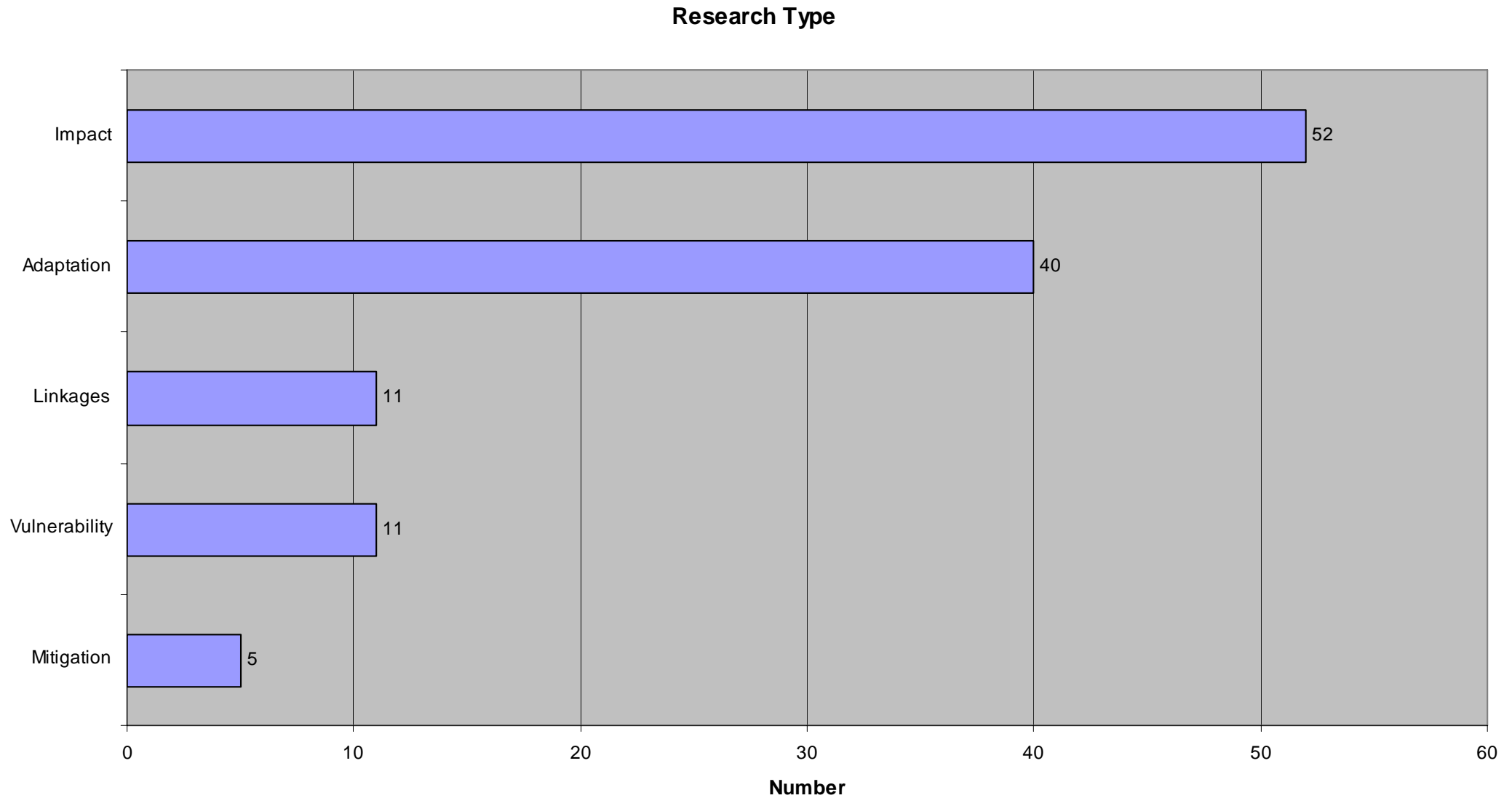
**CSIR**

# Research on Climate Variability and Change and Water in SADC

Type of institutions

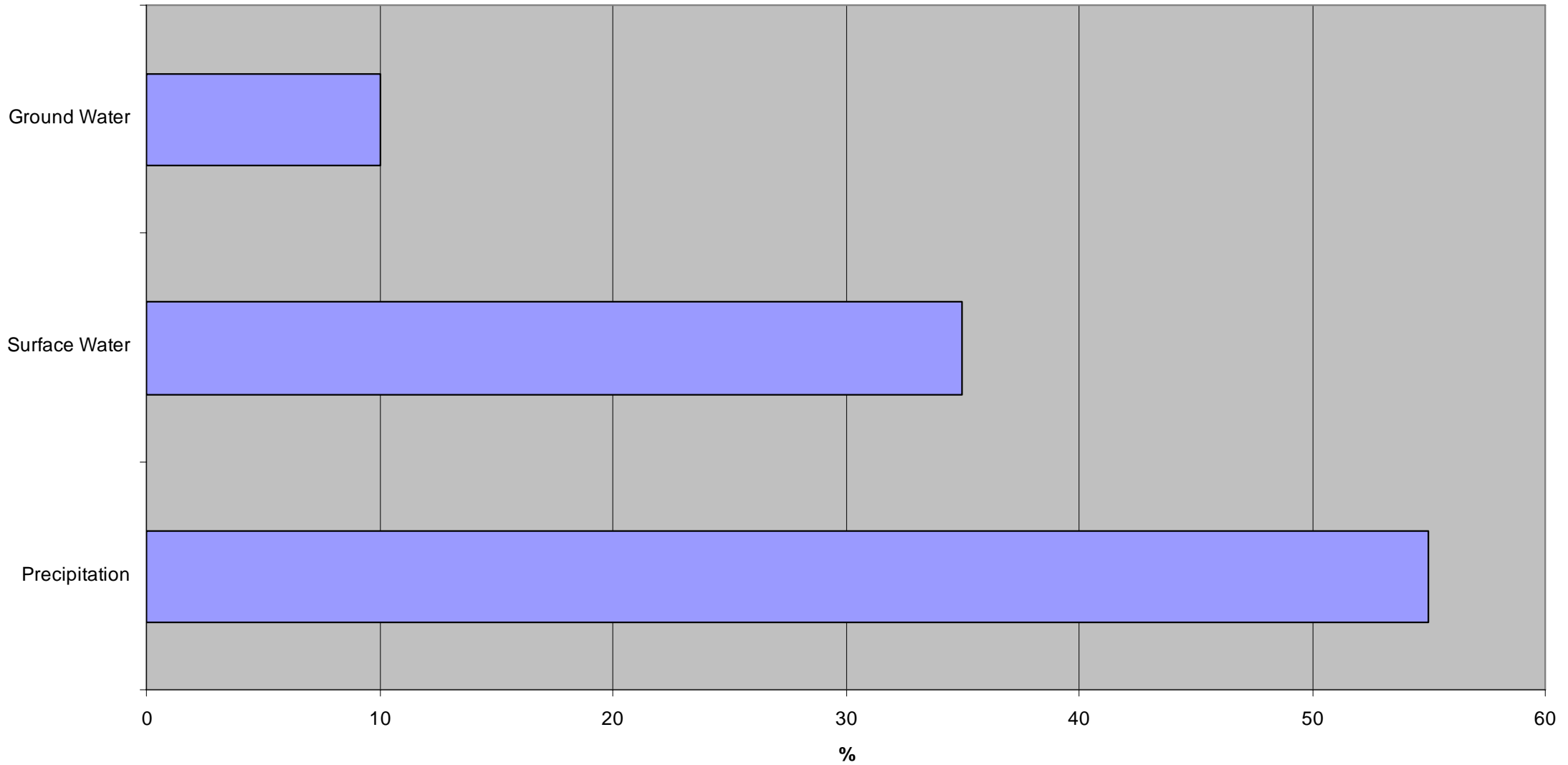


# Research on Climate Variability and Change *and* Water in SADC



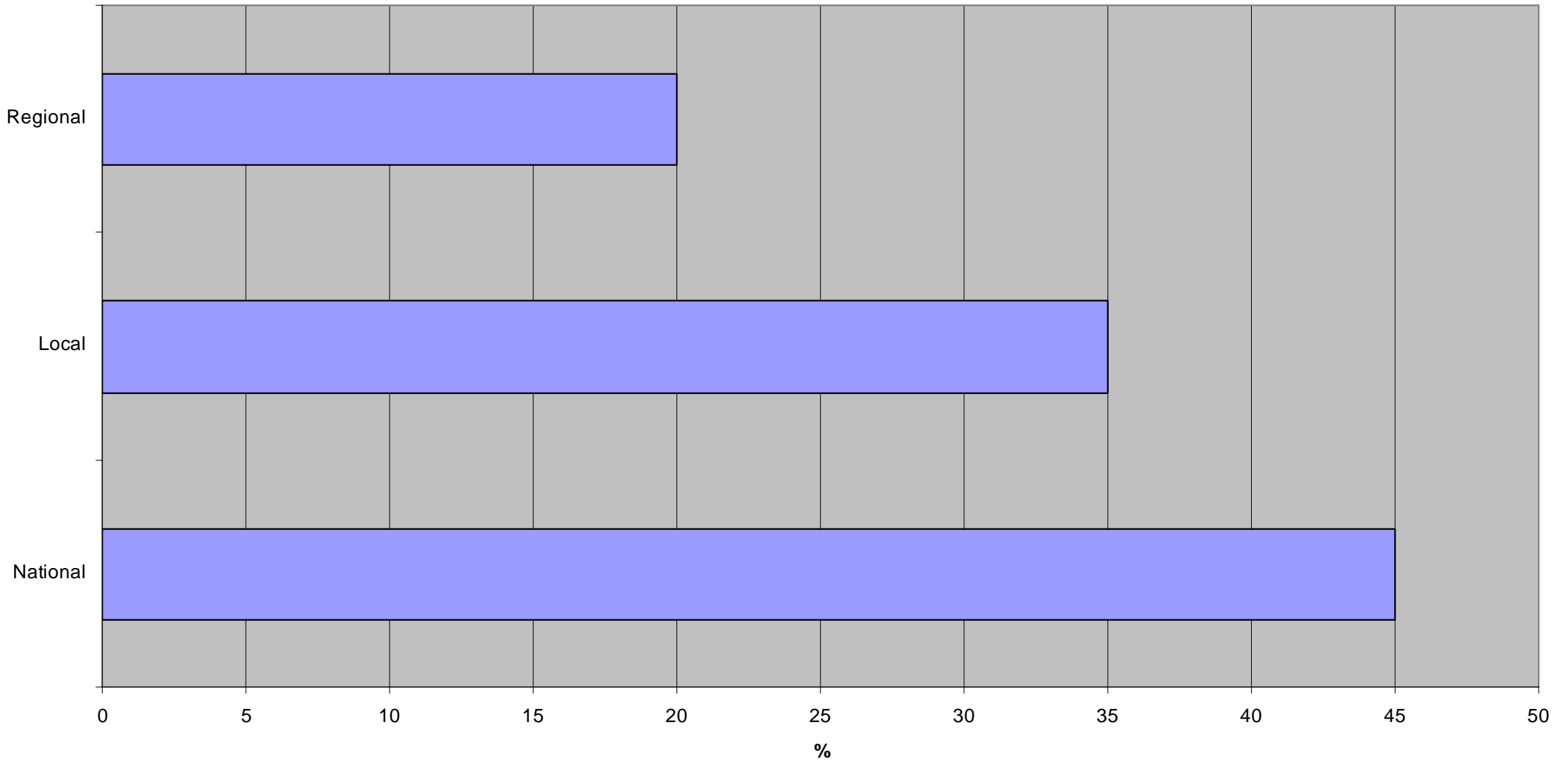
# Research on Climate Variability and Change and Water in SADC

Subject of research



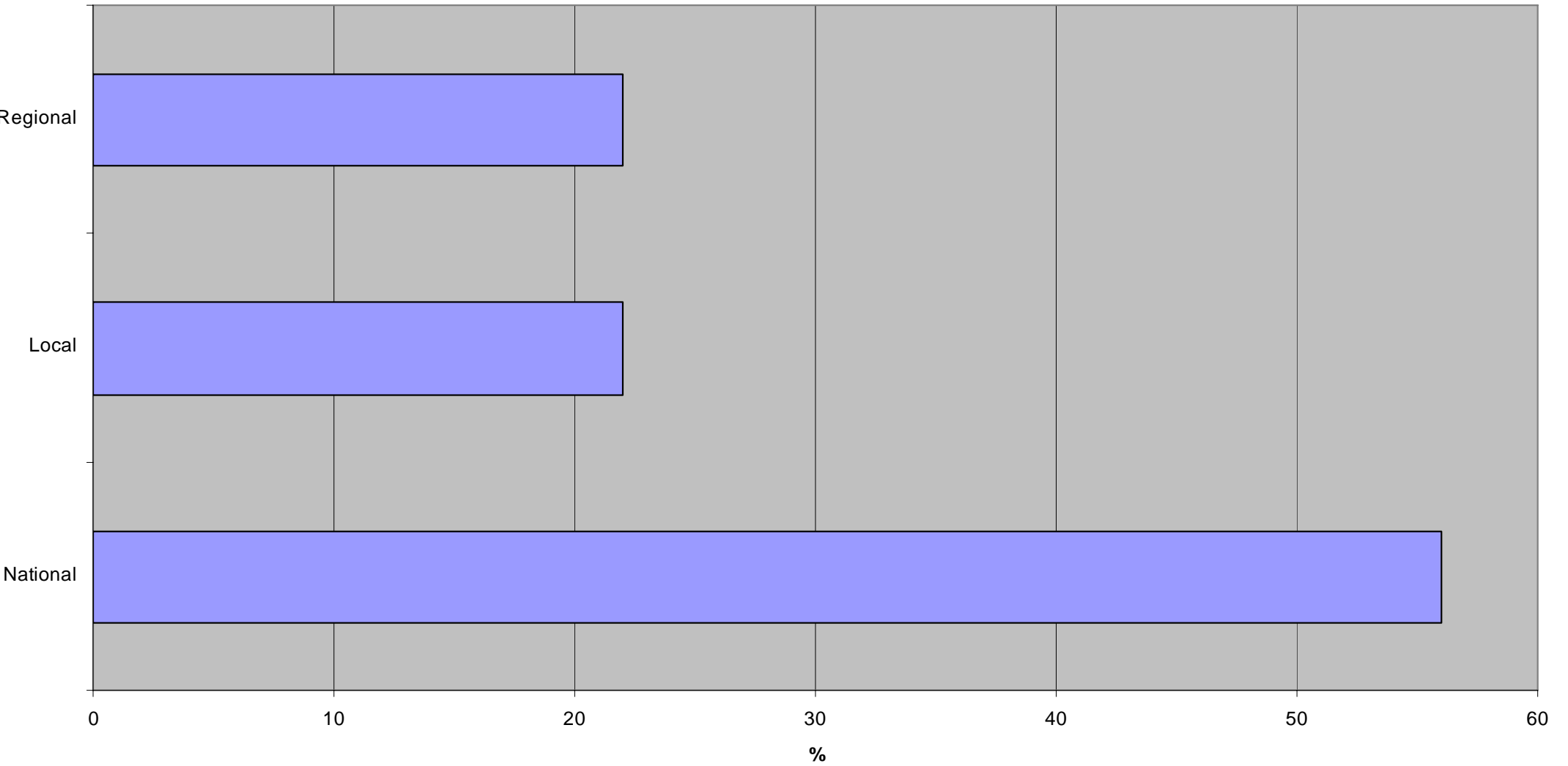
# Research on Climate Variability and Change *and* Water in SADC

Scale of Analysis of Impact Studies



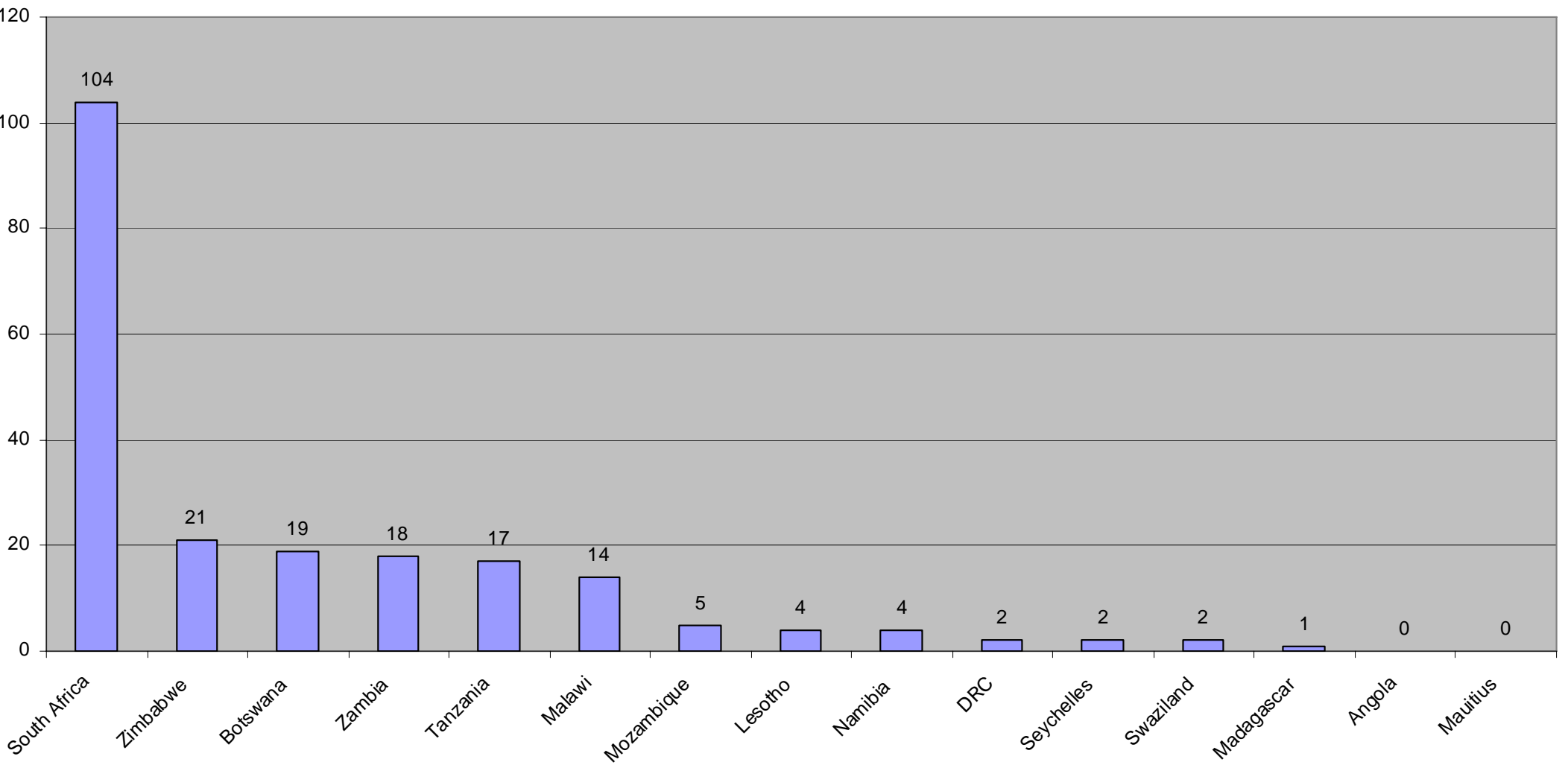
# Research on Climate Variability and Change and Water in SADC

Scale of Analysis of Adaptation studies



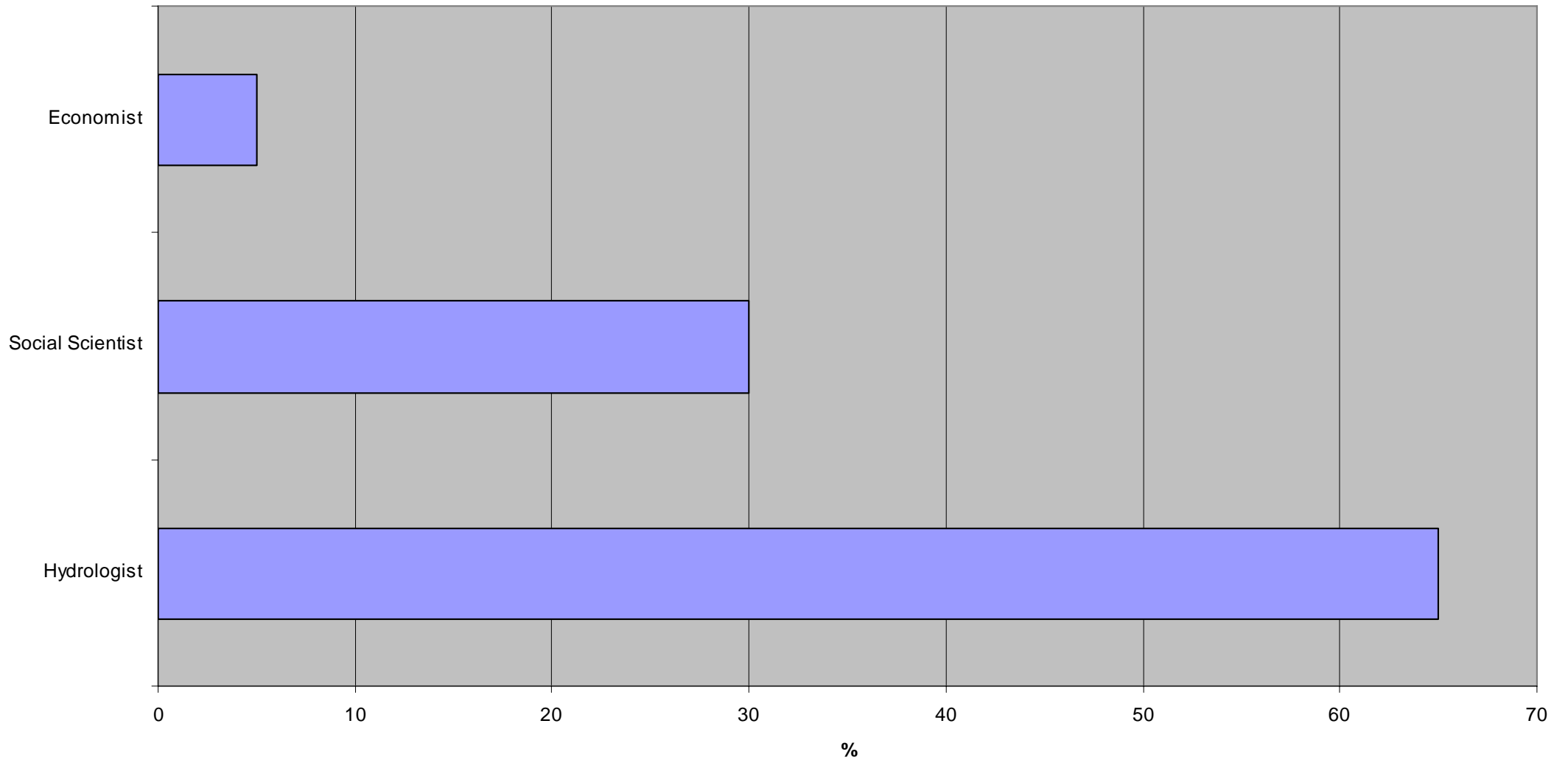
# Research on Climate Variability and Change *and* Water in SADC

Directory of African Scientists involved in Climate Change Research 2005



# Research on Climate Variability and Change and Water in SADC

Researcher Profile



# Networks on Climate Change in SADC

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- ❖ The author could not identify any Network that brings together researchers involved in the analysis of the impacts of climate change on water resources
- ❖ However there are other networks that deal with climate change or water resources in general
- ❖ WaterNet
  - ✓ Capacity building in IWRM
  - ✓ research
- ❖ CAP-Net
  - ✓ Capacity building on IWRM
- ❖ African Ground Water Network (AGW-NET)
  - ✓ Africa wide grouping of ground water professional
- ❖ South Africa Climate Action Network
  - ✓ Seeks to place poverty alleviation at the centre of all climate change efforts
  - ✓ Lobbying
  - ✓ Advocacy

# Knowledge Gaps

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## ❖ The Science

- ✓ Further research required to better understand and predict the impact of CC on precipitation; there are currently a lot of uncertainties
- ✓ Need to scale down models to local level-requires data collection stations at the local level

## ❖ Linking researchers with policy makers

- ✓ Current research is conducted mainly by academic institutions

## ❖ Mitigation

- ✓ Research required to understand implications of mitigation strategies on water resources

## ❖ Linkages

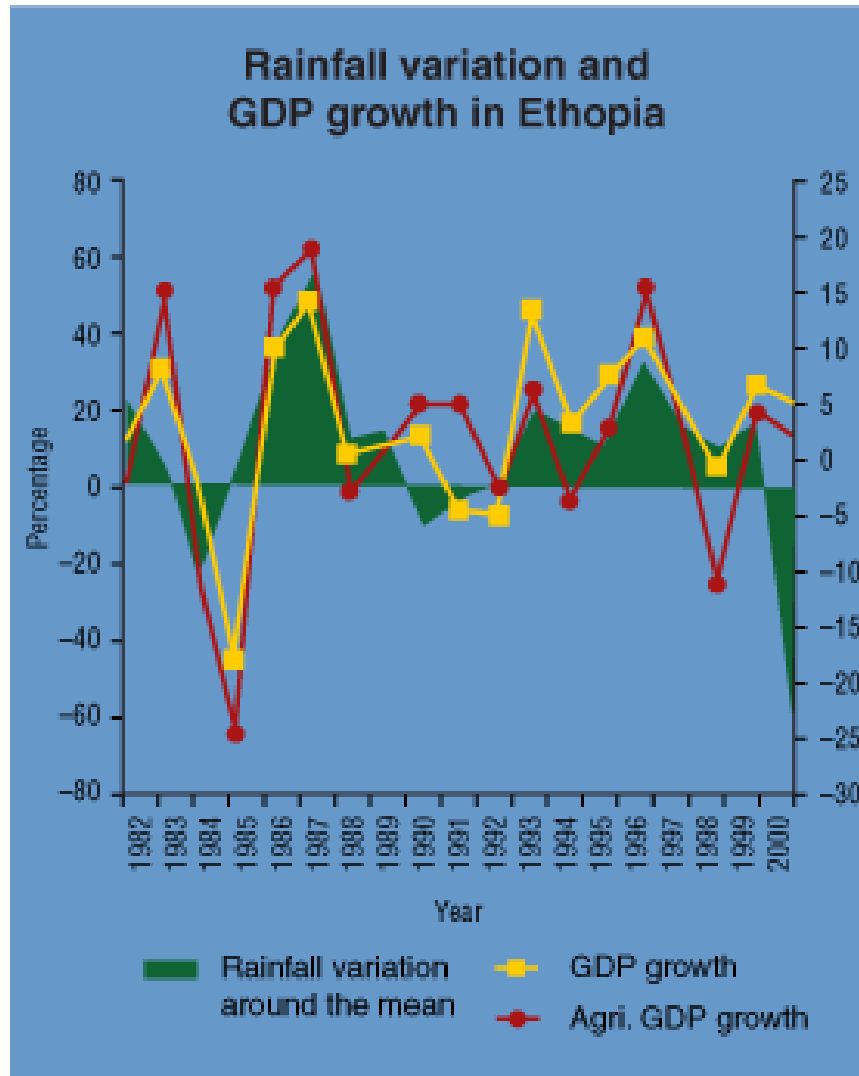
- ✓ This a grey area that requires further research to better understand the linkages between climate change and human health, water and food security

## ❖ Socio-economic dimensions of climate change

- ✓ Lack of empirical studies on coping and adaptation strategies

# Knowledge Gaps

## ❖ Economic dimension of climate change



# Knowledge Gaps

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## ❖ Ground water

- ✓ There is limited knowledge on the impact of climate change on ground water yet this resource

## ❖ Shared water resources

- ✓ Limited research on understating the regional impacts of CC on shared water resources
- ✓ Limited research on regional adaptation strategies

## ❖ Networks

- ✓ Currently no network on CC and water resources

# Way Forward

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- ❖ Support the establishment of a regional network on CC human health, water and food security
  
- ❖ Support research on better understanding the linkages

THANK YOU



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